

REMARKS

Claims 1-43, 46-67 and 69-78 are pending in the above-captioned patent application after this amendment. Claims 1-22, 41-43, 46-58, 73 and 74 are allowed. Claims 23-40, 59-67 and 69-72 are rejected.

The Applicants respectfully disagree with the rejection of claims 23-40, 59-67 and 69-72. However, the Applicants have amended claims 23, 24, 59 and 60 and added new claims 75-78 with this amendment for the purpose of expediting the patent application process in a manner consistent with the goals of the Patent Office (65 Fed. Reg. 54603), and/or to clarify what the Applicants regard as the present invention.

Support for the amendments to claims 23, 24, 59 and 60 and for new claims 75-78 can be found throughout the originally filed specification. In particular, support for amendments to claims 23, 24, 59 and 60, and for the new claims can be found in the specification at least at page 15, line 25 through page 19, line 13, in Figures 4A-4C, and in the originally filed claims.

No new matter is believed to have been added by this amendment.

Reconsideration of the pending application is respectfully requested in view of the above-recited amendments and the arguments set forth below.

Interview Summary

On April 15, 2008, the undersigned attorney for the Applicants conducted a telephonic interview with the Examiner, Andrew P. Smyth, to discuss the rejections to the claims. Prior to the interview, a draft response was forwarded to the Examiner. During the interview, the Examiner agreed that the rejected claims would be allowable if claims 23 and 59 were amended to provide for movement of the stage along a first axis, as opposed to along a stage path, and to provide a pneumatic force provider that provides an acceleration/deceleration force on the stage along the first axis when the stage is in the first stage region. The Applicants want to thank the Examiner for his time and efforts during the interview.

Rejections Under 35 U.S.C. §102(b)

Claims 23, 24, 37-40, 59, 60, 71 and 72

Claims 23, 24, 37-40, 59, 60, 71 and 72 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,987,558 issued to Yuan et al. ("Yuan et al."). The Applicants respectfully submit that the rejection of claims 23 and 59, as amended, is unsupported by the art and should be withdrawn.

In particular, the Patent Office contends that "Yuan (figure 4) discloses: A combination comprising: a mover that moves a stage along a stage path that includes a first stage region and a second stage region; and a force provider assembly including (column 5, lines 18-20) (column 5, lines 24-33) a pneumatic (column 5, lines 14-17) force provider coupled to the stage (201), the force provider providing an acceleration/deceleration force on the stage when the stage is in the first stage region and approximately no force on the stage when the stage is in the second stage region (column 5, lines 20-24); (Note: 204 provides an acceleration/deceleration force on the stage against the force of gravity)."

Further, the Patent Office contends that "Yuan discloses: a method for accelerating and decelerating a stage (abstract), the method comprising the steps of: coupling a mover to the stage that moves the stage along a stage path that includes a first stage region and a second stage region; and coupling a pneumatic force provider (column 5, lines 13-17) to the stage (201), the force provider providing an acceleration/deceleration force on the stage along the stage path when the stage is in the first stage region and approximately no force on the stage when the stage is in the second stage region (column 4, lines 38-48)."

Still further, the Patent Office contends that Yuan et al. discloses additional features as claimed in the present application.

The Applicants provide that Yuan et al. is directed to, in relevant part, an exposure apparatus 21 used to manufacture semiconductor wafers 68, the exposure apparatus including a reticle stage 76, a wafer stage 66, a projection lens assembly 78, an illumination system 74, and an apparatus frame 72 to support the components of the exposure apparatus 21. A stage assembly 200 includes: a stage 201 (which could represent the reticle stage 76 or the wafer stage 66); a base 202 that supports the stage

201 via a first set of bearings 204, wherein the first set of bearings 204 allow the stage 201 to move linearly along the x and y axes and rotationally around the z axis; a second set of bearings 240 that supports the base 202 relative to a stationary surface or the ground 82, wherein the second set of bearings 240 allow the base 202 to move relative to the ground 82 in any directions necessary to reduce reaction forces on the ground 82; and a stage force F_{in} produced by a force generator such as a motor 10 to accelerate the stage 201. Each set of bearings 204, 240 could be a pneumatic system, such as air bearings, or magnetic levitation, mechanical support, or any equivalent support system, to allow the stage 201 to move relative to the base 202 and to allow the base 202 to move relative to the ground 82. The motor 10 could be a planar motor, a linear motor, or any type of commercially available force generator to move the stage 201. (Yuan et al. column 4, line 35 through column 5, line 55, and in Figures 1 and 4).

However, Yuan et al. does not disclose a combination comprising: a mover that moves a stage along a first axis; and a pneumatic force provider coupled to the stage that provides an acceleration/deceleration force on the stage along the first axis when the stage is in the first stage region and approximately no force on the stage when the stage is in the second stage region. In the present application, the mover provides a force to help move the stage along the first axis and the pneumatic force provider provides an acceleration/deceleration force on the stage along the same first axis. Further, the pneumatic force provider provides an acceleration force on the stage when the stage is moving in one direction in the first stage region, and the pneumatic force provider provides a deceleration force on the stage when the stage is moving in the opposite direction in the first stage region.

Yuan et al. teaches the use of a stage force F_{in} produced by a motor 10 to accelerate the stage 201. However, the only teaching of the use of a pneumatic system is for a first set of bearings 204 that supports the stage 201 relative to the base 202 and allows the stage 201 to move relative to the base 202, and for a second set of bearings 240 that supports the base 202 relative to the ground 82 and allows the base 202 to move relative to the ground 82. Yuan et al. does not teach having either set of bearings 204, 240 provide an acceleration force and/or a deceleration force on the stage 201 along the stage path. Even if, as argued by the Examiner, Yuan et al. teaches that the bearings

“204 provides an acceleration/deceleration force on the stage against the force of gravity,” that does not equate to providing an acceleration/deceleration force ***along the first axis***. While the first set of bearings 204 allows the stage 201 to move relative to the base 202, that is accomplished by providing an upward force to maintain the stage 201 spaced apart from the base 202, and it does not entail providing a force on the stage along the first axis.

In distinction to Yuan et al., claim 23 of the present application requires “(a) combination comprising: a mover that moves a stage along a first axis that includes a first stage region and a second stage region; and a force provider assembly including a pneumatic force provider coupled to the stage, the force provider providing an acceleration/deceleration force on the stage along the first axis when the stage is in the first stage region and approximately no force on the stage when the stage is in the second stage region.”

Because Yuan et al. does not disclose all of the elements of claim 23, the § 102(b) rejection is unsupported by the art and should be withdrawn. Because claims 24 and 37-40 depend either directly or indirectly upon claim 23, the § 102(b) rejection of claims 24 and 37-40 is also unsupported by the art and should be withdrawn.

Further, in distinction to Yuan et al., claim 59 of the present application requires “(a) method for accelerating and decelerating a stage ... comprising the steps of: coupling a mover to the stage that moves the stage along a first axis that includes a first stage region and a second stage region; and coupling a pneumatic force provider to the stage, the force provider providing an acceleration/deceleration force on the stage along the first axis when the stage is in the first stage region and approximately no force on the stage when the stage is in the second stage region.”

Because Yuan et al. does not disclose all of the elements of claim 59, the § 102(b) rejection is unsupported by the art and should be withdrawn. Because claims 60, 71 and 72 depend directly upon claim 59, the § 102(b) rejection of claims 60, 71 and 72 is also unsupported by the art and should be withdrawn.

Rejections Under 35 U.S.C. §103(a)

Claims 25-36, 61-67, 69 and 70

Claims 25-36, 61-67, 69 and 70 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,389,939 issued to Skoyles ("Skoyles") in light of Yuan et al. The Applicants respectfully submit that the rejection of claims 25-36, 61-67, 69 and 70 is unsupported by the art and should be withdrawn.

As noted above, the rejection of amended claim 23 is unsupported by the art. Therefore, amended claim 23 negates a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claims 25-36, which directly or indirectly depend from amended claim 23, are patentably distinguishable over the cited combination of references.

Further, as noted above, the rejection of amended claim 59 is unsupported by the art. Therefore, amended claim 59 negates a prima facie showing of obviousness with respect to the cited combination of references. Accordingly, claims 61-67, 69 and 70, which directly or indirectly depend from amended claim 59, are patentably distinguishable over the cited combination of references.

New Claims

New claims 75-78 have been added by this amendment. These claims are of a slightly different scope than the previously pending claims. However, these claims are believed to be patentable in view of the prior art.

Conclusion

In conclusion, the Applicants respectfully assert that claims 1-43, 46-67 and 69-78 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-456-1951 for any reason that would advance the instant application to issue.

Dated this the 7th day of May, 2008.

Respectfully submitted,

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